

WINTERING RECORDS, ECOLOGY AND BEHAVIOUR OF KASHMIR FLYCATCHER
FICEDULA SUBRUBRA (HARTERT & STEINBACHER)¹ASHFAQ AHMED ZARRI^{2,3} AND ASAD R. RAHMANI^{2,4}¹Accepted February 2003²Bombay Natural History Society, Hornbill House, S.B. Singh Road, Mumbai 400 023, Maharashtra, India.³Email: ashfaq_az@rediffmail.com⁴Email: bnhs@bom3.vsnl.net.in

The Kashmir Flycatcher (*Ficedula subrubra*) is vulnerable and is a Red Data Book (RDB) species from the Indian subcontinent (BirdLife International 2001). It has been recorded sparingly in Nepal, Bhutan and Pakistan. While its wintering is confirmed in Sri Lanka, there have been very few records of its wintering in India and its status and distribution within Indian limits is not exactly known. Of the total 28 site records of this species from Indian limits, only two published records (Harrap and Redman 1989; Karthikeyan and Athreya 1992) go to prove its wintering in peninsular India. The rest are passage records from across India during migration.

We conducted this study during March 2001, and October 2001 to April 2002, in the Nilgiri Hills of Tamil Nadu. A total of 16 birds (9 males and 7 females) were recorded from 9 different sites above 2000 m elevation. The Kashmir Flycatcher holds a winter territory and prefers wattle (*Acacia* spp.) openings with good grass cover. It avoids forests with high tree density and canopy cover. Behaviour and ecological aspects are discussed, based on our observations on eight birds, during the two wintering seasons. Habitat degradation and disturbance appear to be serious threats to the long-term survival of this bird. There is an urgent need to carry out status surveys in the wintering and breeding areas and also to study its ecology and biology to aid conservation and management.

Key words: Wintering records, ecology, Kashmir Flycatcher, *Ficedula subrubra*, Nilgiris, behaviour

INTRODUCTION

The Kashmir Flycatcher is one of the 35 species of Muscicapinae reported from the Indian subcontinent (Manakadan and Pittie 2001). There was a great deal of uncertainty regarding the taxonomic position of the Kashmir Flycatcher *Muscicapa subrubra*. It was generally confused with the Red-throated Flycatcher *Ficedula parva*, until it was finally judged "evidently as a separate species on the basis of plumage characteristics, moult sequence and wing formula" (BirdLife International 2001).

It breeds in the northwest Himalaya and Pir Panjal Range (Ali and Ripley 1987) and has been reported very common in Overa Wildlife Sanctuary in Jammu and Kashmir (Jamdar 1987). The Kashmir Flycatcher has a very restricted distribution in northern India and in some parts of Pakistan, occurring as a summer breeding visitor to the side valleys of Kashmir and in the Pir Panjal range (Bates and Lowther 1952; Henry 1955; Roberts 1992). Additionally, the species has been recorded from 37 sites in Sri Lanka, 5 in Pakistan, 7 in Nepal, only 1 in Bhutan (See BirdLife International 2001).

However, very little is known about its wintering status and distribution in Indian limits. It is believed that virtually the entire population winters in Sri Lanka from October to

March above 750 m in gardens, tea estates and on forest edges, and scarce passage migrants are seen over Peninsular India (Ali and Ripley 1987). It has been reported from 28 sites in India since the 19th Century (BirdLife International 2001). Of these, only two published records prove its wintering in Nilgiri hills i.e. Harrap and Redman (1989) based on sightings of four males from the Nilgiris (two in Ooty and two near Avalanche road in February 1985), and Karthikeyan and Athreya (1992) based on a single male record from Muthorai in December 1990. The rest are either spring and passage records from Andhra Pradesh (Currie 1919), Maharashtra (Baker 1922-1930), Bihar (Inglis 1906), Madhya Pradesh (Majumdar 1984), Himachal Pradesh (Whistler 1926), Point Calimere Wildlife Sanctuary, Tamil Nadu (Jamdar 1987), Punjab (Robson 1999; Kalsi *et al.* 2001), and Chandigarh (Rajiv Kalsi *pers. comm.*), and some records from breeding areas in Jammu and Kashmir.

We present our observations on ecology and behaviour of four pairs, two each during two wintering seasons. We also report the results of our survey during October 2001 to April 2002 in the Nilgiri hills. A total of 16 birds (nine males, seven females) were recorded from nine different sites during our study. There is an urgent need to confirm the wintering status and also to study the ecology and behaviour to aid the conservation and management of this species.

STUDY AREA

The present study was conducted in the upper plateau of the Nilgiris (11° 10' and 10° 30' N; 76° 25' and 77° 00' E) in the state of Tamil Nadu, India. The plateau is bordered by Kerala on the west, Karnataka to the north and Coimbatore district to southeast (Fig. 1). The Nilgiris (1,580 sq. km) occupy the highest and westernmost part of Tamil Nadu State. The study area is part of the Nilgiri Biosphere Reserve, within the Western Ghats (Zone 5) in the biogeographic classification of Rodgers and Panwar (1988).

Legris (1969), Blasco (1970) and Lengerke (1977) have given a great deal of information on the weather and the climate of the Nilgiris. The area receives both southwest and northeast monsoons. There is considerable local variation in average annual rainfall in the study area, with Mukurthi National Park and surrounding areas receiving up to 5,600 mm per year. Most of the forested area in the Nilgiris is under plantation, with very little natural montane wet temperate forests locally known as *shola*. Plantations constitute mainly Wattle (*Acacia* sp.), *Eucalyptus* sp., *Pinus* sp., *Cupressus* sp., *Cinchona* (*Cinchona cinchona*), Coffee (*Coffea arabica*), and tea (*Camellia sinensis*). Wattle forms the most dominant introduced species, followed by Eucalyptus and Pine.

METHODOLOGY

Observations in March 2001 (first wintering season)

were made only on two pairs sighted in the Avalanche Reserve Forests area of the Nilgiris South Division. However, during the second wintering season (October 2001 to April 2002), we surveyed all the three Forest Divisions, covering most of the Nilgiris Upper Plateau.

Survey methods

During the first wintering season, we acquainted ourselves with the call types of the Kashmir Flycatcher. In the second wintering season, survey was carried out on a weekly basis in the Nilgiris above 1,800 m elevations, up to the highest peak (Dodabetta 2,634 m). On each survey day, a different area was visited. We first tried to detect the species mainly through calls, and then followed the call till we located the bird. Sampling was stratified according to vegetation types i.e., Wattle, Eucalyptus and Pine and *Shola*. We made an effort to keep to the edges of streams and water sources and nearby areas in each habitat type.

Habitat sampling

We laid 0.05 ha ($r = 12.6$ m) circular plots for habitat sampling in the sites where we recorded the bird. At some sites where birds were seen regularly during the study, more than one plot was taken. Similar plots (one each) were laid in the sites that were thoroughly searched, but no Kashmir Flycatcher was seen. Habitat sampling methods by Muller-Dombois and Ellenberg (1974) and Bibby *et al.* (1992) were followed. At each plot, habitat parameters, such as tree count,

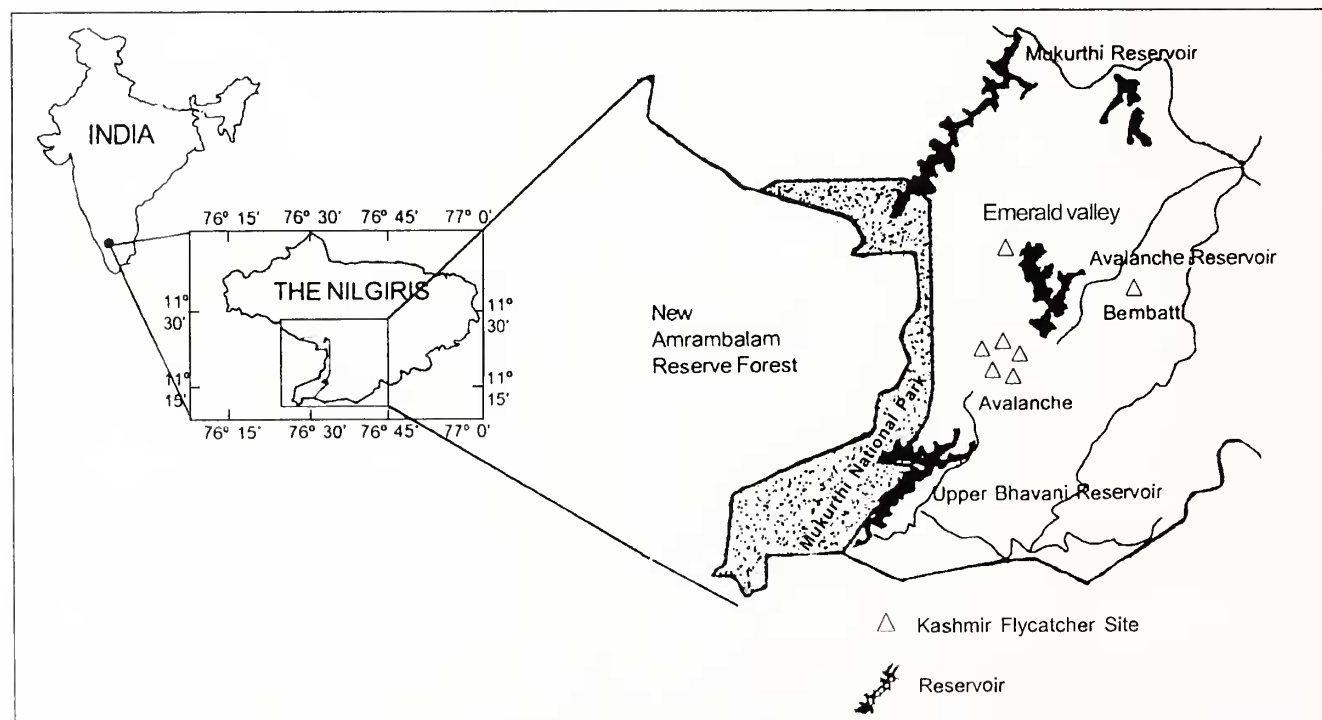


Fig. 1: Kashmir Flycatcher sightings during 2001-2002

Table 1: Kashmir Flycatcher sightings in March 2001 and October 2001 to April 2002 in the Nilgiris

| Site | Date | Habitat | Number | Male | Female | Locality |
|----------------------|----------|-------------|--------|------|--------|-----------------------|
| First winter season | | | | | | |
| 1 | 09/03/01 | Wattle edge | 2 | 1 | 1 | Avalanche |
| 2 | 10/03/01 | Wattle edge | 2 | 1 | 1 | Avalanche |
| Second winter season | | | | | | |
| 3 | 08/10/01 | Wattle edge | 2 | 1 | 1 | Avalanche |
| 4 | 25/11/01 | Wattle edge | 2 | 1 | 1 | Emerald Valley |
| 5 | 07/12/01 | Wattle edge | 2 | 1 | 1 | Avalanche |
| 6 | 23/01/02 | Wattle edge | 2 | 1 | 1 | Avalanche Power House |
| 7 | 22/03/02 | Tea/wattle | 1 | 1 | 0 | Bambatty |
| 8 | 24/03/02 | Wattle | 2 | 1 | 1 | Avalanche |
| 9 | 27/03/02 | Pinus edge | 1 | 1 | 0 | Ramaya road |
| Total | | | 16 | 9 | 7 | |

canopy cover, canopy height, tree species, shrub count, shrub height, shrub cover, grass cover, grass height, litter cover and litter depth were recorded. All trees or shrubs in a plot were counted by species. Canopy height was estimated visually. Shrubs were sampled in 4 x 4 m plots placed randomly in the circular plot. Data on ground cover was estimated by placing 1 x 1 m quadrats placed in these plots. Litter height was measured with a scale at the four corners of each 1 x 1 m quadrat.

We also recorded other parameters, such as distance to road, the nearest stream, the neighbouring village or habitation. Land use practices with respect to cutting, lopping and grazing pressure were also recorded.

Ecology and Behaviour

Observations were carried out from sunrise to sunset on four birds (2 pairs) on Sites 1 and 2 during March 2001, and two pairs on Sites 3 and 6 during the second wintering season. Food and feeding methods, calls and vocalization, roosting behaviour, inter-specific interactions, territoriality and daily movements were recorded.

Analysis

Principal Component Analysis (PCA) was performed to identify the patterns of covariation among the habitat parameters, using SPSS 7.5. It reduces a large number of covarying variables into a smaller number of orthogonal components that account for maximum variation in the data (Manly 1986). Factors with Eigen values below 1 were excluded. The extracted components were then interpreted through factor loading associated with the original variables. The occurrence of birds was plotted against the first two components (PC 1 and PC 2) extracted by PCA.

A natural log transformation ensured that all habitat variables were normally distributed. The categorical variables, namely presence or absence of lopping, grazing pressure and presence of a dry/flowing stream were not included in PCA. The categorical variables were compared between the sites with and without Kashmir Flycatcher sightings, using Fisher's Exact Probability Test.

RESULTS

Survey results

Of the total 16 birds sighted during this study, four birds (2 pairs) were sighted at 2 different sites (Site 1 and 2) in March 2001 (first wintering season). Both these sites were in the Avalanche Reserve forest near the reservoir. However, during our survey between October 2001 and April 2002, we found 12 birds (7 males, 5 females) at 7 sites (Site 4-9) (Table 1). All the birds were sighted in Wattle plantations, except a single male on the edge of a tea plantation and cultivated area (Site 7) and another male sighted at the edge of Pine (*Pinus patula*) and Scotch Broom (*Cytisus scoparius*) forests (Site 9). The details of the sightings made in the two wintering seasons are given in Table 1.

In addition to the sites listed in Table 1, we surveyed Mukurthi National Park, Dodabetta, Upper Bhavani, Ramaya Road, Kundah, Pykara, Pandiar, Caim Hill Reserve, Snowdon, Bambatty, Emerald Valley, Katkopai, Bikkaty area forests of the Nilgiris South, North and Wildlife Divisions (Fig. 1), but no Kashmir Flycatcher could be seen.

Habitat

The results of the first four principal components (PC) extracted by the PCA with Eigen value greater than 1 are

summarised in Table 2. The first four factors (PC 1 to PC 4) accounted for 73.3% of the variation. PC 1 alone accounted for 36% and PC 2 for 17.4%. PC 1 represented increasing tree number, canopy height, canopy cover as well as distance from the nearest settlement and road, and decreasing grass height and cover. PC 2 represents increasing shrub cover and decreasing litter cover and depth. PC 3 represented increasing litter depth. High values of PC 4 represent increasing shrub height and litter depth. Factor loadings of different habitat variables on four major components (PC 1 to PC 4) extracted during PCA are tabulated in Table 2.

The habitat plots with and without Kashmir Flycatcher were plotted on a scatter plot of their principal component (PC 1 and PC 2) scores (Fig. 2). Although overlap occurred, the plot with and without flycatcher sightings occupied distinct regions in the factor space, separating along PC 1, while PC 2 had little effect on the occurrence of birds. Thus, the occurrence of birds seemed to be associated mainly with the decreasing tree cover and increasing grass cover. As is clear from Fig. 2, in the areas with a given tree density, sightings were all on plots with greater grass cover.

A scatter plot of the plots with and without Kashmir Flycatcher sightings along the number of trees and extent of grass cover shows that most of the sightings were in the plots having 10 to 60 trees per plot and 30-60% grass cover. The chances of sightings clearly decrease as the tree density and grass cover increases or decreases from this range (Fig. 3).

Fishers Exact Probability Test indicates that 90% of the plots with flycatcher sightings had grazing pressure ($F_p > 0.002$), but the presence of flowing or dry stream ($F_p = 0.127$),

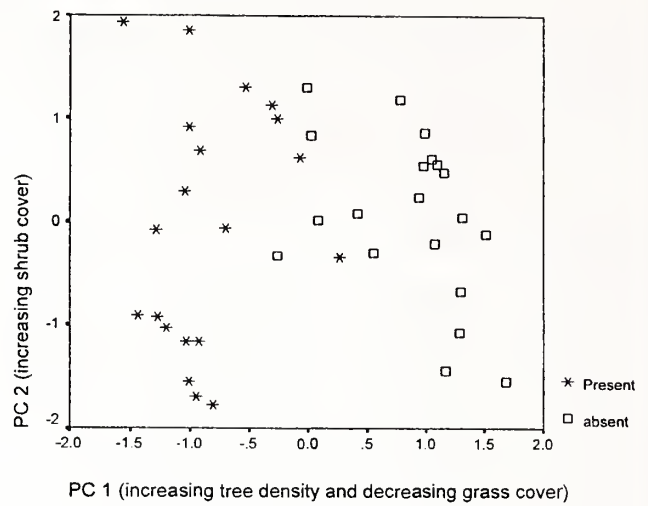


Fig. 2: Occurrence of Kashmir Flycatcher plotted with reference to two components (PC1 and PC2) identified by Principal Component Analysis

or lopping ($F = 0.065$) did not differ significantly between the plots with or without sightings. Comparison of categorical variables (presence or absence of lopping, grazing and presence of a dry/flowing stream) between the sites with and without Kashmir flycatcher sightings using Fisher's Exact Probability Test is summarized in Table 3.

Ecology and Behaviour

i) **Food and Feeding:** The Kashmir Flycatcher is insectivorous (Henry 1955). Food mostly constituted insects, including small butterflies, moths, grubs, earthworms, larvae and caterpillars. The birds were often seen coming down to

Table 2: Factors loadings of different habitat variables on four major components extracted in Principal Component Analysis

| Parameters | Components | | | |
|-----------------------|------------|------------|-----------|------------|
| | PC1 | PC2 | PC3 | PC4 |
| Canopy height | 0.617 | 0.119 | -0.489 | 0.422 |
| Canopy cover | 0.692 | -5.928E-03 | 0.401 | -0.100 |
| Grass cover | -0.953 | 3.449E-02 | 4.698E-02 | -3.544E-02 |
| Grass height | -0.755 | 2.690E-02 | 0.272 | -3.950E-02 |
| Litter cover | 0.571 | -0.579 | 0.311 | 0.280 |
| Litter depth | 0.0368 | -0.280 | 0.516 | 0.588 |
| Dist. from road | 0.0672 | 0.250 | -0.285 | -7.879E-02 |
| Dist. From settlement | 0.0613 | 0.332 | 0.225 | -0.393 |
| No. of shrubs | -7.78E-02 | 0.835 | 0.374 | 2.019E-02 |
| Shrub cover | 0.284 | 0.856 | 9.527E-03 | 0.220 |
| Shrub height | -0.554 | 0.442 | 3.496E-03 | 0.568 |
| Distance from stream | 0.425 | -9.046E-03 | -0.467 | 7.059E-02 |
| No. of trees | 0.694 | 0.170 | 0.273 | -0.162 |
| Eigen Value | 4.68 | 2.28 | 1.40 | 1.17 |
| % variation | 36.04 | 17.36 | 10.80 | 9.06 |
| Cumulative | 36.04 | 53.40 | 64.21 | 73.27 |

Table 3: Comparison of categorical variables between the sites with and without Kashmir Flycatcher sightings using Fisher's Exact Probability Test

| Bird | | Total | Stream (Dry/Flowing) | | Lopping | | Grazing | | |
|-------|--------|--------|----------------------|----|---------|----|---------|----|----|
| | | | 0 | 1 | 0 | 1 | 0 | 1 | |
| | | | count | 20 | 2 | 18 | 8 | 12 | 12 |
| 0 | count% | 100 | 10 | 90 | 40 | 60 | 60 | 40 | |
| 1 | count | 20 | 7 | 13 | 2 | 18 | 2 | 18 | |
| | count% | 100 | 35 | 65 | 10 | 90 | 10 | 90 | |
| Total | | count | 40 | 9 | 31 | 10 | 30 | 14 | 26 |
| | | count% | 100 | 22 | 77 | 25 | 75 | 35 | 65 |

0 = plots with no Kashmir Flycatcher
 1 = plots with Kashmir Flycatcher

buffalo dung and digging out insects from the heap. Size of the food items varied from a few millimetres to nearly 12 cm (earthworm). They usually fed very close to the ground, about 1-2 m.

The feeding method is typical flycatcher-like: taking off to catch an insect and returning with the prey to the same or nearby perch for feeding. However, at times the birds come to the ground unlike most other flycatchers, spend some time feeding or hopping around collecting the prey, before returning to the perch. Similar behaviour has been noted by Henry (1955), and Banks and Banks (1980).

The Kashmir Flycatcher feeds more actively in the morning and evening hours, though it has been recorded feeding throughout the day. At mid-day, the bird takes a longer duration (22 minutes (mean) n = 67) between two feeding bouts, unlike the morning and evening (5 minutes (mean) n = 34) when it feeds frequently, accompanied with other

activities, such as calling, preening and vigilance.

The birds at Site 3 (second wintering season) came almost to the middle of the road to catch insects from the litter. They would usually perch very close to the branches on the road bank and sally from there.

ii) **Winter territory:** Birds generally, including most species of the flycatcher group, pair in the breeding season only, but the Kashmir Flycatcher maintained a pair bond during the wintering period also. Most of the birds sighted were in pairs, except two, which were solitary (Table 1). Of the total 7 pairs sighted during the study, observations were carried out on four pairs. During the entire period of observation, all these pairs advertised their territory by calling frequently, though territorial disputes were not very frequent. A site wise summary of the days these four pairs were recorded in their territories is given in Table 4.

The difference in the number of days the pairs were seen holding territories is because in 2001, our study started in March. Also, in the second wintering season, the variation is because the pairs were sighted on different dates. However, it is important to note that there is hardly any difference in the dates when the pairs were sighted last in both the years. Both the sexes were parochial and seen in their territories throughout the winter.

iii) **Interaction with other birds:** Since the beginning of our observations, the only species that we found aggressively chasing Kashmir Flycatcher was the Pied Bushchat (*Saxicola*

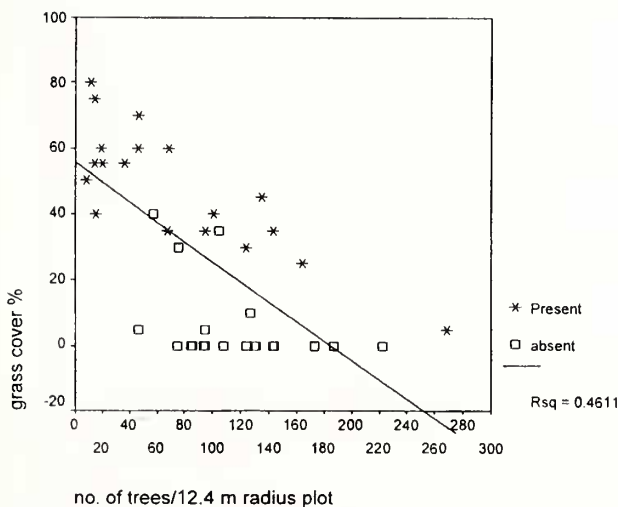


Fig. 3: Occurrence of Kashmir Flycatcher plotted with reference to tree density and grass cover

Table 4: Sitewise detail of the days Kashmir Flycatcher pairs held their territories

| Site No | First seen | Last seen | Days |
|---------|------------|-----------|------|
| 1 | 09/03/01 | 27/03/01 | 19 |
| 2 | 07/03/01 | 27/03/01 | 21 |
| 3 | 08/10/01 | 04/04/02 | 179 |
| 6 | 23/01/02 | 04/04/02 | 72 |

caprata). During the morning and evening hours, when both the species were busy feeding, they appeared more hostile to each other. The Pied Bushchat chased the Kashmir Flycatcher away from the area. Nilgiri Flycatcher (*Emmias albicaudata*) was seen chasing the Kashmir Flycatcher (n = 5) in March and April 2002; however, during the earlier months of wintering (October-November), both species were seen feeding closer, apparently without competition.

The Kashmir Flycatcher was found feeding very close to winter visitors, such as the Greenish Warbler (*Phylloscopus trochiloides*) and Tickell's Leaf Warbler (*Phylloscopus affinis*) and the resident species Great Tit (*Parus major*) without any competition.

Another important change that we recorded in the species' reaction to human presence near their territory was that, up to the end of February, the birds were not shy and allowed us to make close observations (from 10-15 m), but after March till the birds left, they became very shy and would be disturbed even from a considerable distance (20-30 m). They would become restless, stop calling and would go high up in the trees.

iv) **Diurnal activities and movements:** Most of their activities were centred near the territory. The female would remain almost throughout the day in the territory and would go for feeding up to 200-300 m from the roost site. However, the male would leave the territory between 0930 to 1000 hrs (n = 20) and would forage up to 500 m from the main territory. He would return to the territory once or twice to reinforce the pair bond, and on his arrival the pair would call *whip whip whip* loudly for some time.

The male spends 25-165 min before leaving the territory to resume its foraging elsewhere. But, he would return around 1820 hrs and immediately after his arrival, both male and female would again start calling. After feeding together for about 5 minutes, both would fly away and then come back to roost at the same site after sunset (1845 h), when nearly all other species had already settled.

v) **Site fidelity:** Site 2 (first winter) and Site 6 (second winter) were at exactly the same spot in Avalanche at the edge of a Wattle plantation. Both the years, the pairs were seen holding the territory near the same *Ternstroemia japonica* tree. Perhaps the flycatchers have site fidelity, but this can only be confirmed by colour banding the pairs in the wintering grounds and monitoring their arrival next season.

vi) **Calls and vocalization:** The bird is very vocal, and keeps calling most of the day. It frequently utters a single note whistle *whip whip whip whip...* resembling the Pied Bushchat (*Saxicola caprata*) call in form when the Bushchat is agitated. Henry (1955) has also described this particular call in the wintering areas of Kashmir Flycatcher. However,

the call that Ali and Ripley (1987) described (a curious little creaking rattle *chack* being uttered while flitting about) was never heard. Instead, a call sounding *chit..rrrr..rr chit* is uttered as a rule when the bird flits or loops from one branch to another or descends to the ground to feed. This call is accompanied by a flicking of the wings and the tail. A two-component call *chrit chrit* or a single *chrit* is often heard associated with the *Chit..rrrr..rr chit* call.

The *chit..rrrr..rr chit* or *chrit chrit* is uttered less frequently (6-7 times per minute) than the *whip whip whip* call, which is uttered almost constantly at a single call per second. The *whip whip* call can be heard near the territory during most of the day, at short intervals. However, the calling frequency drops abruptly to a single call in 2-3 minutes before the roosting.

Complex call during resting: Apart from the two distinct and identifiable calls, the Kashmir Flycatcher utters another unique low tone call while resting during the daytime between feeding bouts. This call sounds like a combination of the calls of a Ground Shrew (*Suncus murinus*) "*seek seek seek*", Common Myna (*Acridotheres tristis*) "*kew kew kreew-kreew-kreew*", and a House Sparrow (*Passer domesticus*) "*cheer cheer cheer*", all uttered in sequence. While making this complex call, the bird holds its beak up vertically and the throat bulges out. The call cannot be heard from a distance of more than 5 m.

vii) **Roosting Behaviour:** One pair in March 2001 and two pairs from October 2001 to April 2002 were regularly observed for roosting behaviour. The flycatcher used the same patch for roosting throughout the winter and followed a strict time schedule. Roosting trees were in their territories, where most of their diurnal activities were confined (usually a small part of a plantation in the transmission line openings). Though the females remained for most of the time in the same small patch, before settling to roost, the pair would go away together from the site for about 20-25 minutes to the nearby stands of plantation, take a different route and silently come back to the roosting site. The height at which the species roosts is markedly different from that of most of its diurnal activities. Birds were seen roosting at more than 8 m, near the crown of wattle or thickly foliated branches of Eucalyptus.

Threats in the Nilgiris

Clearly there is no threat from poaching or killing for this tiny bird, but habitat changes and anthropogenic pressure on its wintering quarter in the Nilgiris are serious threats that may have already affected the species' existence and use of this area as a regular wintering ground in future. Habitat degradation and loss is the key threat in almost all the area, namely Kashmir, Sri Lanka and Nilgiris. Though quantifiable

data was not collected, we summarize the main threats to species in the Nilgiris based on our observations:

A) **Unsafe habitat:** Historically, the bird might have been using the edges and openings in the *shola* in the Nilgiris Upper Plateau, as there were no plantations earlier. Most of the plantations are not more than four to five decades old. Wattle, Pine and a variety of other plantations brought a sudden change in the Nilgiri vegetation. Though they are not its original habitat, the Kashmir Flycatcher seems to have adapted fairly to Wattle plantations. As cited in Table 1, almost all the birds were recorded in Wattle. Despite being within range forests and protected areas, the plantations have low value owing to poor timber quality or economic returns. Thus, the plantation habitat is under a variety of threats, such as clear felling, illegal cutting or lopping by the surrounding villages and others.

B) **Uncontrolled firewood collection and grazing:** The villagers dwelling around most of the Kashmir Flycatcher sites are totally dependent on plantations for fuelwood, thus mounting pressure on the already degraded habitat. The Kashmir Flycatcher seems to prefer Wattle patches with wide openings lined with dead branches and twigs that serve as its perch for flycatching. The regular removal of such dead and fallen trees, and branches by the villagers affects the microhabitat of the species. Herds of feral and domestic buffaloes were seen near Kashmir Flycatcher wintering sites. These herds ram into the plantations and birds were seen getting scared, perched high in the trees and calling aloud in alarm or flying across to other patches of plantation.

C) **Clear felling of privately owned plantations:** Some of the privately owned Wattle plantations near the Flycatcher sites have been clear felled by private owners during the study period. It is important to note that these plantations have proved to be the home to the species. Any move to clear fell such plantations (in privately owned lands or Reserve Forest) should take into consideration the impact on the wintering population of Kashmir Flycatcher in the Nilgiris.

DISCUSSION

Most ornithologists are of the opinion that almost the entire population of Kashmir Flycatcher winters in Sri Lanka, with a small population (recently discovered) wintering in the Nilgiris. Though Harrap and Redman (1989), Karthikeyan and Athreya (1992), Robertson (1990) and Robson (1985) reported the Nilgiris as wintering ground for the Kashmir Flycatcher, all of them were based on one or two sight records during winter. Also, Baker (1922-1930) gave its distribution as extending from the Afghan boundary and Gilgit, but there are no specimens or records from these places (Roberts 1992),

nor does it breed around Simla (Himachal Pradesh) or Garhwal (Uttaranchal) in India, as he claimed.

Our sightings of 16 birds are more than all the earlier records of the species from peninsular India during the past 83 years, since Currie (1919) reported it from Secunderabad. This is proof that the Nilgiris are a regular wintering ground for this flycatcher. Although data are not available on the status of the populations in the breeding or wintering area, the species may be declining in both the grounds on account of recent habitat alterations. Over the years, population has declined in Sri Lanka (Collar *et al.* 2002).

Comparisons of PC 1 and PC 2 scores for sites with and without sightings indicate that the Kashmir Flycatcher selects open areas with more grass cover and low shrubs, and avoids areas with higher tree density. Wattle plantations with openings created by transmission lines provide such a habitat, but such areas generally have greater grazing and lopping pressure also. *Sholas* are generally well protected and have high tree density and canopy cover. But, the species avoids *sholas* and seems very comfortably adjusted in the Wattle plantation openings and edges. Competition with the resident species may also force the Kashmir Flycatcher to go for such marginal and disturbed habitats.

Association of species with forest having adequate openings and considerably good grass cover (that is usually grazed) rather than thick *sholas* (having minimum ground cover) may be the reason for significant differences in the plots with and without sightings.

Though the species remains in pairs, at two sites we saw single males. It may be that the birds were feeding apart during the day, when they were sighted, and both most likely had a mate feeding nearby. Females remained in their territory throughout the day, thus leaving the site before roosting and following another route to reach the regular roosting site silently, maybe an anti-predation strategy.

Feeding without aggression with species such as the Grey Tit, Greenish Warbler and the Tickell's Leaf Warbler may be because of resource partitioning or differences in mode of feeding and prey. There seems to be no apparent shortage of resource, but aggression towards and getting chased by species, such as Nilgiri Flycatcher and Pied Bushchat with the onset of the breeding season may be because of similarity in the mode of resource exploitation and food. The Nilgiri Flycatcher starts singing and breeding in mid-March and it was only during this time that it became hostile to the Kashmir Flycatcher. Interestingly, this hostile behaviour is recorded at a time when all birds are in need of more energy. This factor may be playing a considerable role in forcing the return migration.

Whip whip whip... and *Chrit...rrr...chrit* calls were very commonly heard up to a considerable distance from the

territory. These calls did not resemble those of any other species of flycatchers in the Nilgiris, making it easier to detect the Kashmir Flycatcher during the surveys. During evening, the bird called less, which may be because the bird feeds more intensively during pre-roosting time. Complex calls heard may be because of its fondness for mimicry. Though these calls were very low in tone, the posture of the bird (beak raised vertically and throat bulging) indicated a huge effort in uttering such calls.

The Kashmir Flycatcher is the only flycatcher found in the study area that holds a winter territory. Becoming more vigilant and sensitive to human presence in their territory before the return migration may be their protective strategies.

Most of the Kashmir Flycatcher sightings were in Avalanche Reserve Forest area, which is facing heavy anthropogenic pressure. These forests should be protected and disturbance should be minimised, mainly in the wintering season. Clear felling of the private plantations should be minimized; otherwise it may affect the wintering population of this scarce bird species.

Though it is generally thought that a very small

population winters in the Nilgiri Hills, we suspect there is possibility of a good wintering population of Kashmir Flycatcher in the Nilgiris Upper Plateau, though it is not comparable to Sri Lanka. A concerted effort is needed to determine the status of the wintering population in peninsular India, mainly in the Nilgiri Hills.

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REFERENCES

- ALI, S. & S.D. RIPLEY (1987): Compact Handbook of the Birds of India and Pakistan. 2nd Edn, Oxford University Press, Delhi. 737 pp.
- BANKS, J. & J. BANKS (1980): A selection of birds of Sri Lanka. Published by the authors. London. 30 pp.
- BATES, R.S.P. & E.H.N. LOWTHER (1952): Breeding Birds of Kashmir. Oxford University Press, London. 364 pp.
- BAKER, E.C.S. (1922-1930): The Fauna of British India, including Ceylon and Burma. Vol. II, 2nd Edn, London: Taylor and Francis. 561 pp.
- BIBBY, C.J., N.D. BURGESS, D.A. HILL (1992): Bird Census Techniques. Academic Press Limited.
- BIRDLIFE INTERNATIONAL (2001): Threatened birds of Asia: the BirdLife International Red Data Book. Cambridge, UK: BirdLife International. 2217 pp.
- BLASCO, F. (1970): Aspects of the flora and ecology of savanna of the South Indian hills. *J. Bombay Nat. Hist. Soc.* 67: 522-534.
- COLLAR, N.J., A.V. ANDREEV, S. SUBRAMANYA & J.A. TOBIAS (2002): Threatened birds of Asia: BirdLife International Red Data Book.
- CURRIE, A.J. (1919): Occurrence of Indian Redbreasted Flycatcher (*Siphia hyperythra*) in the Deccan. *J. Bombay Nat. Hist. Soc.* 26(2): 667.
- HARRAP, S.C. & N.J. REDMAN (1989): Some observations on the scarce birds in Kerala and Tamil Nadu. *J. Bombay Nat. Hist. Soc.* 86(3): 460-461.
- HENRY, G.M. (1955): A Guide to the Birds of Ceylon. Colombo. Oxford University Press, London. 432 pp.
- INGLIS, C.M. (1906): Occurrence of Indian Red-breasted Flycatcher (*Siphia hyperythra*) in Bengal. *J. Bombay Nat. Hist. Soc.* 17: 520
- JAMDAR, NITIN (1987): Additions to the birds of Point Calimere, S. India. *J. Bombay Nat. Hist. Soc.* 84(1): 206.
- KALSI, R.S., A. DUA & M. KALSI (2001): Status survey and identification of Important Bird Area sites for the Bristled Grass-Warbler and Kashmir Flycatcher. Report submitted to Bombay Natural History Society, India.
- KARTHIKEYAN, S., & VIDYA R. ATHREYA (1992): Kashmir Red-breasted Flycatcher *Muscicapa subrubra* Hartert and Steinbacher at Ooty. *J. Bombay Nat. Hist. Soc.* 89(3): 376-377.
- LEGRIS, P. (1969): Variabilite des facteur du climat: cas des Montagnes du sud de Inde et de Ceylon. Institute Francais de Pondichey, travaux de la Section scientifique et Technique 8 no. 1. 104 pp. (Original not seen).
- LENGERKE, H.J.V. (1977): The Nilgiris, weather and climate of mountain area in South India. (Beitrag zur Sudasienfoschung 32). Wiesbaden Franz Steiner Verlag. 343 pp.
- MAJUMDAR, N. (1984): On the collection of birds from Bastar district, Madhya Pradesh. *Rec. zool. Surv. India, Occ.. Pap.* 59. (Original not seen).
- MANAKADAN, R. & A. PITTIE (2001): Standardised common and scientific names of the birds of the Indian subcontinent. *Buceros* 6(1), 21 pp.
- MANLY, B.F.J. (1986): Multivariate Statistical Methods: A primer. Chapman and Hall, London.
- MULLER-DOMBOIS, D. & H. ELLENBERG (1974): Aims and methods of vegetation ecology. John Wiley, London. 547 pp.
- ROBERTS, T.J. (1992): The Birds of Pakistan. Oxford University Press, Karachi. Vol. II, 617 pp.
- ROBERTSON, A. (1990): Which flycatcher winters in Western Ghats? *OBC Bull.* 12: 32.
- ROBSON, C. (1985): Recent reports: India. *OBC Bull.* 2 (Autumn): 36-37.
- ROBSON, C (1999): Recent reports: India. *OBC Bull.* 29: 51-52.
- RODGERS, W.A. & H.S. PANWAR (1988): Planning a protected area network. (2 vols). Wildlife Institute of India, Dehra Dun. 341 pp.
- WHISTLER, H. (1926): Birds of Kangra District. *Ibis* 12(2): 521-581, 724-783.

